AGENDA

National Energy Technology Laboratory/Office of Power Technologies Hydrogen Workshop
September 19-20, 2000

Tuesday, September 19, 2000

7:30 - 8:30 a.m. Registration and Continental Breakfast

8:30 - 8:45 a.m. **Opening Announcements and Overall Objectives**
Harold F. Chambers, Jr., NETL Hydrogen Coordinator
National Energy Technology Laboratory

8:45 - 9:00 a.m. **Director's Welcome**
Alice Q. Murphy, Deputy Director, Operations
National Energy Technology Laboratory

9:00 - 9:20 a.m. **DOE Hydrogen Program**
Brian Castelli, Chief of Staff for Office of Energy Efficiency and Renewable Energy (EERE)
U.S. Department of Energy

9:20 - 9:40 a.m. **Meeting the Challenge - Ultra-Clean Fuels for the 21st Century**
C. Lowell Miller, Product Line Director, Coal Fuels & Industrial Systems
Office of Coal Fuels and Industrial Systems
Office of Fossil Energy
U.S. Department of Energy

9:40 - 10:00 a.m. **Break**

10:00 - 10:30 a.m. **Coal's Role in Energy Security ... The Bridge to Renewables**
William A. Bruno, Vice President – Financial & Economic Analysis
CONSOL Inc.

10:30 - 11:00 a.m. **Technoeconomic Analysis of Hydrogen Production from Low-BTU Western Coal with CO_2 Sequestration and Coal Bed Methane Recovery**
Pamela Spath, Senior Chemical Process Engineer
National Renewable Energy Laboratory

Coal Processing Plants for Hydrogen Production with CO_2 Capture
Michael D. Rutkowski, Project Manager, Technical Services Group
Parsons Infrastructure & Technology Group Inc.

11:00 - 11:30 p.m.	**Hydrogen and Fuel Cell Activities at the California Air Resources Board** *Shannon Baxter, Engineer, Chairman's Office of Science & Advance Technology* *California Air Resources Board*
11:30 - 12:00 p.m.	**Technology and Experience with Hydrogen Based Power Plants** *Douglas M. Todd, Manager Process/Power Plants* *General Electric Company*
12:00 - 1:00 p.m.	**Lunch**
1:00 - 1:15 p.m.	**Instructions for Breakout Groups**
1:15 - 3:00 p.m.	**Facilitated Breakout Session I** Utilization - Building 922, Room 101 Process Technology - Building 922, Conference Center B Implementation Strategy - Building 922, Room 150
3:00 - 3:15 p.m.	**Break** *(Participants may switch Breakout Groups)*
3:15 - 4:45 p.m.	**Facilitated Breakout Sessions** (continued)
4:45 p.m.	Adjourn

Wednesday, September 20, 2000

7:30 - 8:30 a.m.	**Registration and Continental Breakfast**
8:30 - 9:15 a.m.	**Reports from Previous Breakout Session Topics**
9:15 - 11:00 a.m.	**Facilitated Breakout Session II**
	Breakout Group #1 - Building 922, Room 101 Breakout Group #2 - Building 922, Conference Center B Breakout Group #3 - Building 922, Room 150
11:00 - 12:00 p.m.	**Summary and Next Steps**
12:00 - 1:00 p.m.	Lunch
1:00 - 3:00 p.m.	NETL Tour (Optional)

Anticipated Outcome: This Workshop is expected to be a focused effort to define blueprints for concepts for hydrogen production and utilization from domestic fossil fuels, with carbon sequestration. A report summarizing results of the workshop will be available for review by the larger technical community by e-mail or web site posting within thirty days.

Workshop Overall Perspective

This Workshop brings together the resources and stakeholders of NETL and OPT in a joint effort to further accelerate the production of large volumes of low-cost hydrogen from fossil fuels prior to the development of sustainable, renewable energy sources. An initial plenary session will present the government and industrial perspective on hydrogen. This will be followed by breakout sessions discussing aspects of hydrogen research, development, and demonstration. In Session I, attendees will be assigned to one of three groups discussing the topic areas of Hydrogen Utilization, Process Technology, and Implementation Strategy. Results from these three groups will then be assembled into Integrated Demonstration Systems in Session II. The following describes the concepts and anticipated outcomes from these groups.

Utilization - Stationary power, transportation, industrial heat, merchant hydrogen, hydrogen cooling, NO_x abatement and fuel cells. Discussions will include possible future applications for hydrogen, the status of present development of any application, research needs for further development of these applications, and a timeline or roadmap for their development. Outcomes from this group will be a prioritization of hydrogen applications and the needs for developing these applications.

Process Technology - Discussion of the separate technologies involved in the production of hydrogen from fossil fuels and the economics of the production process. Individual technologies will include gasification, synthesis gas separation into hydrogen and carbon dioxide, and carbon sequestration. Reports summarizing the results of previous workshops in areas such as gasification and carbon sequestration may be given in this group to avoid duplicating the efforts of the previous workshop and diluting the discussion of hydrogen in the present workshop. Enabling technologies, such as materials development, and equipment items, such as air separation units or hydrogen compressors, may also be part of the discussion. Process economics and systems analysis may also be discussed. Outcomes from this group will be identification of the highest needs in the elements of process development for the conversion of fossil fuels to hydrogen and an agreement, if possible, on a consistent set of assumptions to be used in systems analysis and developing process economic predictions.

Implementation Strategy - This discussion will involve identification of potential legislative, regulatory or policy issues which would affect the decision to implement future hydrogen activities in the area of hydrogen production from fossil fuels or the application of hydrogen technology. Public acceptance of widespread hydrogen usage may also be a topic of discussion. Outcome from this group will be identification of non-technical issues that will either inhibit or promote the development or utilization of hydrogen technology.

Integrated Systems Demonstration - In this session, the attendees will be divided into three separate groups, each containing members from each of the Session I groups. The new groups will be asked to take the individual elements of the previous day's discussion and put them into complete demonstration projects for hydrogen production from a fossil fuel, together with an application and a strategy for its implementation. Outcomes desired from each group will be three to five individual systems.